

**Chemical Name:** Afidopyropen

**USEPA PC Code:** 026200

**USEPA MRID:** 49688945

**USEPA DP Barcode:** 435146

**PMRA Data Code (DACO):** 9.2.3

**PMRA Study No. (UKID):** 2628091

**Data Requirement:** Non-guideline/OECD Guideline No. 207

**Test Material:** M440I024 (metabolite of BAS 440 I, Reg. No. 5886215)

**Purity:** 91.30%

**Active Ingredient:** Afidopyropen

**IUPAC Name:** [(3*S*,4*R*,4*aR*,6*S*,6*aS*,12*R*,12*aS*,12*bS*)-3-(cyclopropylcarbonyloxy)-1,2,3,4,4*a*,5,6,6*a*,12*a*,12*b*-decahydro-6,12-dihydroxy-4,6*a*,12*b*-trimethyl-11-oxo-9-(3-pyridyl)-11*H*,12*H*-benzo[*f*]pyrano[4,3-*b*]chromen-4-yl]methylcyclopropane carboxylate

**CAS Name:** [(3*S*,4*R*,4*aR*,6*S*,6*aS*,12*R*,12*aS*,12*bS*)-3-(cyclopropylcarbonyl)oxy]-1,3,4,4*a*,5,6,6*a*,12,12*a*,12*b*-decahydro-6,12-dihydroxy-4,6*a*,12*b*-trimethyl-11-oxo-9-(3-pyridyl)-2*H*,11*H*-naphtho[2,1-*b*]pyrano[3,4-*e*]pyran-4-yl]methylcyclopropanecarboxylate

**CAS No.:** 915972-17-7

**Synonyms:** INSCALIS™

**Primary Reviewer:** Moncie V. Wright  
Environmental Scientist, CDM/CSS-Dynamac JV

**Signature:** 

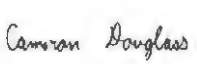
**Date:** 16 March 2017

**Secondary Reviewer:** John Marton, Ph.D.  
Environmental Scientist, CDM/CSS-Dynamac JV

**Signature:** 

**Date:** 21 March 2017

**USEPA Reviewer:** Cameron Douglass, Ph.D.  
Biologist, USEPA/OCSP/OPP/EFED/ERBIV

**Signature:**  2018.02.16 14:01:27 -05'00'

**Date:** 16 February 2018

**PMRA Reviewer:** Vedad Izadi  
Evaluation Officer, PMRA/EAD/ERSII

**Date:** 18 August 2017

**Date Evaluation Completed:** 18 August 2017

**Note that the USEPA reviewer verified that statistical analyses (if appropriate) were correctly performed, but did not comprehensively revise the summary document prepared by CDM/CSS-Dynamac JV personnel ("the contractor"). The USEPA reviewer confirmed reported study author endpoints, but took at 'face value' the contractor's summary of the original study report.**

**CITATION:**

Matthias Ganssman. 2015. Reg.No. 5886215 (Metabolite of BAS 440 I, M440I024): Acute toxicity to the earthworm *Eisenia fetida* in artificial soil with 10% peat. Study conducted by ibacon GmbH, Rossdorf, Germany. Laboratory study number: 106341021. Study sponsored by BASF SE, Ludwigshafen, Germany. Study initiated July 29, 2015 and completed September 28, 2015.

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**Executive Summary:**

A 14-day acute earthworm toxicity study was conducted with ~11 to 12 month old *Eisenia fetida*, which were exposed to M440I024 (metabolite of Afidopyropen, purity 91.3%) at nominal concentrations of 0 (control) and 913 mg a.i./kg dw soil (adjusting for purity of the test substance). The artificial soil used in the study was composed of 10% sphagnum peat moss, 20% kaolin clay, 69.6% fine quartz sand, and 0.4% calcium carbonate.

All earthworms appeared normal during the test, and no behavioral abnormalities were observed. Mean % body weight change was similar between the control (-3.4%) and single exposure group (-4.3%).

Earthworm mortality and growth were not affected by the test material, resulting in LC/EC<sub>50</sub> and NOAEC values of >913 and 913 mg a.i./kg dw soil, respectively.

**Results Synopsis:**

|   |                                |
|---|--------------------------------|
| LC/EC <sub>50</sub> : >913 mg a.i./kg dw soil | 95% C.I.: N/A                  |
| Probit Slope: N/A                             | 95% C.I.: N/A                  |
| NOAEC: 913 mg a.i./kg dw soil                 | LOAEC: >913 mg a.i./kg dw soil |

Endpoint(s) Affected: none

**EPA Classification:** Supplemental (may be used quantitatively for risk estimation)

**PMRA Classification:** Fully reliable

**I. DATA SOURCE**

|                                 |   |
|---------------------------------|---|
| <b>USEPA MRID No.:</b>          | 49688945  |
| <b>PMRA UKID:</b>               | 2628091   |
| <b>Study Title:</b>             | Reg.No. 5886215 (Metabolite of BAS 440 I, M440I024: Acute toxicity to the earthworm <i>Eisenia fetida</i> in artificial soil with 10% peat. |
| <b>Study Author(s):</b>         | Matthias Ganssmann  |
| <b>Testing Laboratory:</b>      | Ibacon GmbH, Rossdorf, Germany  |
| <b>Laboratory Report No.:</b>   | 106341021   |
| <b>Sponsor Study No.:</b>       | 735863  |
| <b>Study Completion Date:</b>   | September 28, 2015  |
| <b>Data Access:</b>             | Data submitter is data owner  |
| <b>Data Protection Claimed:</b> | Yes; no claim of confidentiality was made.  |

**II. MATERIALS AND METHODS**

|                                   |  |
|-----------------------------------|--|
| <b>Test Guideline:</b>            | No direct OCSPP guidance currently exists; conforms to OECD 207  |
| <b>Deviations from Guideline:</b> | The reviewer assessed the study methods according to EPA OCSPP 850.3100: <i>Earthworm Subchronic Toxicity Test</i> and OECD No. 207: <i>Earthworm, Acute Toxicity Test</i> . |

The following deviations from the OCSPP 850.3100 guidelines were noted:

1. The study author did not report if earthworms were randomly assigned to the test chambers or if the treatments were randomly assigned to individual test chamber locations.
2. Test substance concentrations were not analytically verified.

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3. The study duration was only 14 days. The guidelines recommend 28 days.

**GLP Compliance:** Yes; study conducted in compliance with the OECD and German principles of GLP, and meets the U.S. EPA (40 CFR parts 160 and 792) GLP, with the exception that recognized differences exist between the GLP principles/standards of OECD and the EPA.

**A. MATERIALS**

**Test Material:** M440I024 (metabolite of BAS 440 I, Reg. No. 5886215)

**Test Material Identity:** Solid, with a purity of 91.3%; batch no. L82-149

**Test Sediment:** Artificial sediment; composed of 10% sphagnum peat moss (air-dried, finely ground, with no visible plant remains), 20% kaolin clay (>30% kaolinite), 69.6% fine quartz sand (>50% by mass of particle size 0.05 mm to 0.2 mm), and 0.4% calcium carbonate.

Maximum water holding capacity: 55% of the dry weight

**Details on Preparation and Application of Test Materials:**

The single exposure group (1000 mg/kg dw soil) was prepared by mixing 2050 mg of the test material into 20 g of fine quartz sand and 2030 g dw of the artificial soil mixture. The % purity of the test material was not taken into account. The reviewer adjusted the nominal test concentration for the reported purity of 91.3%.

The control was prepared in the same way, only without addition of the test material. While mixing the artificial soil in a laboratory mixer for ~5 minutes the soil of each control and treatment group was moistened with deionized water. Each group was treated in one batch and then split into 4 replicates. Each replicate batch was placed into the exposure vessels.

**Analytical Monitoring:** Not performed.

**Details on Analytical Method:** N/A

**Reference Material:** 2-chloroacetamide

**Reference Material Identity:** N/A

**Vehicle:** None used.

**Test Organism (Species):** *Eisenia fetida* (earthworm)

**Animal Group:** Phylum: Annelida; Class: Clitellata; Order: Haplotaxida; Family: Lumbricidae

**Details on Test Organisms:** Earthworms were cultured in-house under standard conditions at room temperature in a breeding medium of manure, peat, sand, calcium carbonate, and straw. Earthworms were fed with manure. Earthworms used for the test were ~11 to 12 months old, weighed 300 to 600 mg, and had clitellum. Acclimation was performed for 1 day in artificial soil under the test conditions.

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**B. STUDY DESIGN AND METHODS**

**Study Type:** Laboratory  
**Test Duration Type:** Acute  
**Limit Test:** Yes  
**Total Exposure Duration:** 14 days  
**Post-Exposure Observation Period:** N/A  
**Remarks:** N/A

**Test Environmental Conditions:**

Temperature: 18 to 22°C  
pH: 6.0 to 6.1  
Water content of artificial soil: 30.8 to 32.0% water content (56.1 to 58.1 % of water holding capacity)

**Photoperiod and Lighting:** Continuous light, maintained at 400 to 800 lux

**Nominal Concentrations:** 0 (negative control), and 1000 mg/kg dry weight (equivalent to 913 mg a.i./kg dry weight sediment when adjusted for % purity)

**Test Units:** Glass jars (1-L), loosely covered by glass lids to enable air exchange and to minimize evaporation  
Each replicate jar contained 645 g material, ~ 500 g dw soil + DI water.

**No. earthworms/unit & no. of replicates:**

10 earthworms/unit, 4 units (reps) per control and treatment group

**Introduction:** Earthworms were washed, dried, weighed individually, then placed on the surface of the treated artificial soil.

**Feeding:** No food was provided during the test.

**Test Design:** Earthworms were exposed to the test material or a control via treated or untreated artificial soil, respectively, for 14 days. Four replicate test jars were maintained in each control and treatment, with 10 worms in each jar. Each test compartment contained 645 g material (~ 500 g dw soil + DI water). Earthworms were placed on the surface of the treated or untreated artificial soil at test initiation. Observations of mortality and behavioral abnormalities were performed weekly. Mean body weights were determined at test termination.

**III. APPLICANT'S REPORTED RESULTS AND DISCUSSION**

**Exposure Duration:** 14 days

**Endpoint(s):** Mortality (LC<sub>50</sub>) and body weight change (NOAEC and LOAEC)

**Effect Concentration:** ***Mortality***

LC<sub>50</sub>: >1000 mg/kg dw soil (not adjusted for % purity)

***Body weight change***

NOAEC: 1000 mg/kg dw soil

LOAEC: >1000 mg/kg dw soil

**Basis for Concentration:** Nominal

**Effect Concentration Type:** Test material

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**Basis for Effect:** N/A; no effect

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**Details on Applicant-Provided Results:**

All earthworms appeared normal during the test, and no behavioral abnormalities were observed.

Mean % body weight change was similar between the control (-3.4%) and single exposure group (-4.3%).

| Nominal Concentration (mg a.i./kg dw soil) | Day 14                    |                                      |
|--|---------------------------|--------------------------------------|
|  | Mean Percent Survival (%) | Mean Body Weight Change, mg/worm (%) |
| Control                                    | 100                       | -16.1 (-3.4%)                        |
| 913  | 100                       | -20 (-4.3%)                          |

**Applicant-Reported Statistics and Error Estimates**

The body weight change data were tested for normality and homogeneity of variance using the Shapiro-Wilk's test and Levene's test, respectively ( $\alpha = 0.05$ ). The data passed the tests for normality and homogeneity of variance, and were subsequently analyzed via the Student t-test (pair-wise comparison, two-sided,  $\alpha = 0.05$ ). The mortality data was not analyzed because there was no mortality in this study.

The NOAEC and LOAEC were determined by visual interpretation of the body weight change data and the results of the statistical analyses. All analyses were performed using the nominal concentrations (not adjusted for % purity) and the program ToxRat Professional, Version 2.10.05 (ToxRat Solutions GmbH).

**IV. OVERALL REMARKS, ATTACHMENTS**

The applicant submitted a full study report (PDF document), and an OECD-formatted summary document.

**V. PRIMARY REVIEWER'S ANALYSIS AND CONCLUSIONS****Reviewer's Statistical Verification:**

The reviewer entered the mortality and % body weight change data into CETIS statistical software version 1.8.7.12 with database backend settings implemented by EFED on 10/20/15. Analyses were conducted using the nominal test concentrations. There was no mortality or other significant treatment effects in this study, so LC/EC<sub>50</sub> values and NOAEC values were qualitatively estimated relative to the highest tested concentration (*i.e.*, no statistical analyses were conducted and no reports are attached).

L/IC<sub>50</sub>: >913 mg a.i./kg dw soil

95% C.I.: N/A

Probit Slope: N/A

95% C.I.: N/A

NOAEC: 913 mg a.i./kg dw soil

LOAEC: >913 mg a.i./kg dw soil

**Reviewer's Comments:**

The reviewer's and study author's results were in general agreement; there was no treatment-related toxicity in this study. However, the reviewer reported the NOAEC and LC<sub>50</sub> values based on the test concentrations adjusted for the % purity of the test material. The reviewer results were reported in the Reviewer's Conclusions and Executive Summary sections of this DER.

The in-life phase of the study was conducted between August 7 and 24, 2015.

**Reviewer's Conclusions:**

Earthworm mortality and growth were not affected by the test material, resulting in NOAEC and LC/EC<sub>50</sub> values of 913 and >913 mg a.i./kg dw soil, respectively.

**Results Synopsis:**

LC/EC<sub>50</sub>: >913 mg a.i./kg dw soil

Probit Slope: N/A

NOAEC: 913 mg a.i./kg dw soil

95% C.I.: N/A

95% C.I.: N/A

LOAEC: >913 mg a.i./kg dw soil

Endpoint(s) Affected: none

**EPA Classification:** Supplemental (may be used quantitatively for risk estimation)

**PMRA Classification:** Fully reliable